the keyboard to the bottom. To stow the keyboard, the first keyboard section is folded from left to right, on top of the second keyboard section. The two keyboard sections are then rotated under the housing about a pivot point lying in about the center of the housing, with the keys of the two sections facing each other and the back of the second section facing downward and remaining planar with the bottom of the housing.

An advantage of the present invention is that the keyboards after being folded are rotated or pivoted to a storage position beneath the display housing. This structure allows the overall form factor of the folded device to be limited only by the display size.

Another advantage of the present invention is the keyboard and housing can lie securely on a flat surface where the keyboard to housing hinge is designed so that both the keyboard and the housing bottom surfaces lie in the same plane, allowing the user to type comfortably with the keyboard in a deployed position.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as other features and advantages thereof, will be best understood by reference to the detailed description which follows, read in conjunction with the accompanying drawings, wherein:

FIG. 1*a* Represents a plan view of a preferred embodiment of the present invention having a horizontal hinge;

FIG. 1*b* Represents a cross-sectional view of the preferred embodiment of FIG. 1*a;*

FIG. 1*c* Represents a cross-sectional view of the preferred embodiment of FIG. 1*a* at 1*c*—1*c;*

FIG. 1*d* Represents a back view of the preferred embodiment of FIG. 1*a* which shows the peripheral connectors;

FIG. 1*e* Represents a pen for screen input;

FIG. 2*a* Represents a perspective view of a preferred embodiment of the present invention having a vertical hinge with a two part keyboard;

FIG. 2*b* Represents a plan view of the preferred embodiment of FIG. 2*a;*

FIG. 2*c* Represents a right side view of the preferred embodiment of FIG. 2*a* with the keyboard deployed;

FIG. 2*d* Represents a right side view of the preferred embodiment of FIG. 2*a* with the keyboard stowed;

FIG. 2*e* Represents a cross-sectional view of the housing of the preferred embodiment shown in FIG. 2*b* at 2*e*—2*e;*

FIG. 3*a* Represents a plan view of the preferred embodiment of an embodiment of the present invention;

FIG. 3*b* Represents a side view of the preferred embodiment of FIG. 3*a*;

FIG. 3*c* Represents a side view of the preferred embodiment of FIG. 3*a*.

FIG. 3*d* Represents a side view of the preferred embodiment of FIG. 3*a* in an optional configuration,

FIG. 4*a* Represents a plain view of a preferred embodiment; and

FIG. 4*b* Represents a side view of the preferred embodiment of FIG. 4*a*.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The preferred embodiments of the present invention are best understood by referring to FIGS. 1*a*–4*b* of the drawings, like numerals being used for like and corresponding parts of the various drawings.

With reference to FIG. 1*a*, there is shown an embodiment of the present invention in connection with a portable computer **100** of the type commonly referred to as a pen computer or personal digital assistant. Computer **100** includes a housing **102** with a screen **104**, and is uniquely provided with a folding keyboard **106** shown in the deployed position in FIG. 1. In this embodiment, the keyboard **106** comprises a first hinge **108** connecting a lower keyboard section **110** with an upper keyboard section **112**. The first hinge connects the keyboard sections between a row of keys in the typical keyboard layout and preferably in the center of the keyboard. Thus, in a preferred embodiment there are 3 rows of keys above and three rows of keys below the hinge in the respective sections of the keyboard.

The first section of the keyboard **110** may be electrically connected with a flexible connection through the hinge **108** to the second section **112** or directly to the motherboard located in the housing **102**. The sections **110**, **112** may incorporate individual circuit boards for interconnecting the keys, or they may use a single flexible circuit board with the interconnections between the sections through the hinge **108**.

A second hinge **114**, shown in FIG. 1*a* and FIG. 1*b*, pivotally connects the two hinged keyboard sections to the housing **102**. The hinge structure may be of any suitable hinge appropriate to the usage expected of the computer, such as a piano hinge, a "living" hinge molded of synthetic materials, or other hinges known to persons skilled in the applicable arts of mechanical design. In the illustrated preferred embodiment, the second hinge **114** is integrally formed with the housing **102** and has a lower surface in a plane with the lower surface of the housing. The second hinge **114** is thus preferably formed in such a way as to insure the keyboard and housing will lie securely on a flat surface allowing the user to type comfortably with the keyboard in a deployed position. The second hinge **114** also preferably incorporates electrical connections from the keys to the main processing board of the computer to transmit signals corresponding to the pressing of keys by the user. Also in this preferred embodiment is a pen holder cavity **116** integrally formed with the second hinge **114** as shown in FIG. 1*b*.

FIG. 1*c* shows a side view of the preferred embodiment of FIG. 1*a* with the keyboard **106** in the stowed position. The keyboard is stowed by first folding the keyboard about hinge **108**, shown by the arrow in FIG. 1*b* and then rotating the folded keyboard into the cavity **118** in the underside of the housing, shown by the arrow in FIG. 1*c*.

A back view of the housing **102** is shown in FIG. 1*d*. Various connectors **120** are shown for making connections to the computer such as serial communication ports, parallel communication ports, modem, external power, etc. Also shown is an on/off switch **122**. FIG. 1*e* represents a pen **124** that maybe used for imputing on the screen **104** and is stored in pen cavity **116**.

With reference to FIG. 2*a* there is shown a perspective view, and with reference to FIG. 2*b* a plan view of a second embodiment of the present invention also shown in connection with a portable computer **200** of the type commonly referred to as a pen computer or personal digital assistant. Computer **200** includes a housing **202** with a screen **204**, and is uniquely provided with a folding keyboard **206** shown in the deployed position in FIG. 2*a*. In this embodiment, the keyboard **206** comprises a first hinge **208** connecting a left